UNIVERSITY OF GONDAR

COLLEGE OF MEDICINE AND HEALTH SCIENCES

INSTITUTE OF PUBLIC HEALTH

KNOWLEDGE AND ASSOCIATED FACTORS TOWARDS BOVINE TUBERCULOSIS AND BRUCELLOSIS AMONG THE COMMUNITY IN LAY GAYINT DISTRICT, SOUTH GONDAR ZONE, AMHARA REGIONAL STATE, ETHIOPIA.

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Knowledge and associated factors towards Bovine Tuberculosis and Brucellosis among the community in Lay Gayint District, South Gondar Zone, Amhara Regional State, Ethiopia, 2017.

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LIST OF ACRONYMS AND ABBREVIATIONS

ANRS	Amhara National Regional State
BTB	*Bovine tuberculosis*
BVSc	Bachelor of Veterinary Science
DVM	Doctor of Veterinary Medicine
EID	Emerging Infectious Disease
ETB	Ethiopian Birr
FAO	Food and Agricultural Organization
GPP	Good Production Practice
HB	Human *Brucellosis*
IRB	Institutional Review Board
KAP	Knowledge Attitude and Practice
MASL	Metres above Sea Level
OIE	World Organization for Animal Health
SPSS	Statistical Package for Social Science
TB	Tuberculosis
VET.	Veterinary
WHO	World Health Organization

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ABSTRACT

INTRODUCTION: Zoonoses are the current global public health challenges. Animal origin food borne zoonoses are transmitted from animal to humans and vies versa. It accounts 75% of all emerging and 60% of all infectious diseases. It is highly associated with consumption of raw milk and meat and direct or in direct contact with animals.

Objective: To assess knowledge and associated factors towards Bovine tuberculosis and brucellosis in rural community of Lay Gayint District, South Gondar Zone of Amhara Region, Ethiopia.

Materials and Methods: A community based cross-sectional study design was conducted from March to April, 2017. Among 628 proportionally allocated and randomly selected households, one family member greater than 18 years old was randomly included to in the data collection. Data was entered by using Epi info Version 7 and cleaning and analysis was made by using SPSS version 20 software. Bivariable and multivariable logistic regression analysis was used to see the influence of the different factors on the level of knowledge on the outcome variable and a p-value <0.05 was taken as statistically significant.

RESULTS; A total of 579 respondents' were participated in the study with a response rate of 92.2%.Of which the majority, 503(86.9%) were rural residents, 355(57.9%) males. The overall knowledge of the respondents on Bovine tuberculosis and brucellosis were 191(33%), knowledge on zoonoticity of BTB and brucellosis were 199(34.4%), 273(47.2%) respectively. Factors like sex, residence, practice, and means of transmission and information source of the respondents were significantly associated on knowledge p-value less than 0.05.at 95% confidence interval. Where Knew means of Transmission (AOR=2.848, 95%, CI; 1.919-4.227), female sex (AOR=.580 95% CI; .394-.853), good practice (AOR= 2.42, 95% CI; 1.46-3.99), gain information source (AOR=1.69, 95% CI; 1.156-2.484) and rural residence (AOR=1.853, 95% CI; 1.092-3.143) were significantly associated with the knowledge of the participants.

Conclusion and recommendations. The overall knowledge of respondents on bovine tuberculosis and brucellosis and their information source on the diseases were poor. Therefore, Awareness of the community regarding BTB and brucellosis were should be raised through collaborated works in one health philosophy from the community to high levels in both human and animal health sectors.

Key words: Associated factors, Bovine tuberculosis, Brucellosis, Lay Gayint, Knowledge.

1. INTRODUCTION

1.1 Statement of the problem

Zoonotic infectious diseases have the most important concern to humans since the beginning of the domestication of animals about 10,000 years ago. It remains a significant cause of mortality and morbidity globally. About 75%of emerging infectious diseases (EID) are zoonoses [1]. It accounts 60% of all infectious disease pathogens and 75 % of all emerging pathogens that affect both animals and humans in the world [2]. Zoonoses pose a major health threats to both complex scientific and policy challenges [3].

Zoonotic diseases are diseases that are transmitted from animal to humans and vises versa have the cause of important human health issues. Increased collaboration between the world organization for animal health (OIE), the Food and Agriculture Organization (FAO) and the World Health Organization (WHO) on scientific and technical matters related to food safety and zoonotic disease is of principal importance [4]. International food trade and foreign travel are increasing, bringing important social and economic benefits. But this trend also makes the spread of illnesses around the world easier [5].

Unsafe preparation and handling of food materials lead to the cause of many foodborne diseases [6]. Most of these diseases are infections caused by a variety of bacteria, viruses and parasites [7]. An adequate supply of healthy, wholesome and safe food is essential to the health and well-being of humans [8]. The consumption of contaminated or unsafe foods may result in illness, also referred to as food borne disease [9]. Food borne diseases remain a major public health problem in most developing countries due to difficulties in securing optimal hygienic and food handling practices especially in Africa [10]. Knowledge on the zoonoticity of BTB were known by 54.4%, of participants [11]. Community based study on BTB and brucellosis in Jimma indicated 54.4 and 78.9 respondents don’t have knowledge

respectively [12] 85% of the households handled aborted fetuses and afterbirths with bare hands and 78% of the owners with infected herds usually drank raw milk [13].

Economical and zoonotic implications of foodborne zoonoses in the rural communities of Ethiopia in related to their traditional life styles, feeding habits animal origin foodborne disease patterns are high. This is due to lack of knowledge about animal husbandry practices and perception of zoonotic disease. The possible sources of infections from sick animal include all infected tissues, aborted fetus, vaginal discharges, and contaminated materials. The source of human infection were associated with direct or indirect exposure of infected animals, while prevention and control of the disease focuses on vaccination of animals and avoid direct and indirect contact of infected animals [14].

In the study area there are a large number of small scale livestock producers at household level and were used to assess the status of their knowledge towards: Bovine tuberculosis and Brucellosis.

1.2 Literature review

1.2.1 Bovine tuberculosis and brucellosis towards food borne zoonotic disease.

Zoonotic diseases represent one of the commonest causes of morbidity and mortality worldwide, and have a negative impact on trade, transportation and economies. Zoonoses and communicable diseases are common to man and animals worldwide [15].

Foodborne diseases remain a major public health problem across the globe. The problem is more severe in developing countries because of lack of personal hygiene and food safety measures [16]. Food contamination can occur at any point during its preparation, transporting to bear the importance of food safety and hygiene in the prevention of food borne diseases [17].

Brucellosis is common bacterial zoonosis and occupational hazard with a high prevalence in developing countries. Transmission to humans can occur through contact with infected animals or animal products. [18]. A study conducted in Egypt showed that risk factors identified for human *brucellosis* were close contact with animals, exposure to aborted materials and consumption of dairy products [19].

Another study conducted at Mzuzu Agricultural Development Division, Northern Malawi assessed dairy farmers' general knowledge of zoonoses, their risks for infection with zoonotic bovine tuberculosis (BTB) and brucellosis, and evaluated farm practices to prevent disease transmission. The most commonly named means of transmission were milk (67.0%) and meat (56.0%) [20].

Ethiopia is one of the sub-Saharan African countries with the largest animal and human population. Brucellosis sero-positivity is higher in animals of the pastoral than the mixed crop-livestock production system. Public awareness creation could help reduce its occurrence in humans [21]. More than half of the people didn’t know the source of bovine tuberculosis and brucellosis in a study carried out at Arsi zone,

Oromia, Ethiopia [22]. In Ethiopia, BTB is considered endemic based on abattoir inspection and tuberculin test surveys. However, there are no records of nationwide distribution because of inadequate disease surveillance and lack of good diagnostic facilities [23].

1.2.2 Knowledge towards Bovine tuberculosis and brucellosis

A cross sectional study was conducted to assess the awareness of zoonotic diseases in Kadapa district of India. About 72% of the respondents were having no awareness about zoonotic diseases. Hygienic practices of the farmers during cleaning of udder while milking and during cleaning of sheds were also considered to be negligible [24]**.**

Study conducted on perception of common foodborne zoonoses in Jimma of Taeniasis, bovine tuberculosis, brucellosis related to source and mode of transmission showed that the presence of different knowledge and practices among the respondents. About 69.6 % of them didn't know that bovine brucellosis could be transmitted from cattle to humans the means of transmission had been conducted by the consumption of raw meat 66.8% and by contact with infected animals were 14.3% [25].

A study conducted to measure the occupational risks and awareness levels of participants in extensive farms didn't show good knowledge about *brucellosis*. The level of awareness was significantly lower in extensive farms in which 69.2% respondents belonged to low to medium knowledge level categories, whereas 30.8% respondents had high knowledge ($p<0.05$) regarding different aspects of zoonotic diseases. Age, education, and herd size had no significant effect on the knowledge level and awareness of farmers toward zoonotic diseases. [26].

Awareness of BTB by cattle owners is of extreme importance to policy makers when considering mitigation. A study has revealed low levels of awareness among cattle owners on *BTB*. Low and medium level of awareness could be due to remoteness, lack of health facilities, poor extension services and low training status on rearing

and handling of animals, and low literacy rate which have been reported as major contributors to the low level of awareness among dairy farmers [27].

The aim of disease control programme in the animal is to reduce the impact of a disease on human health and the economic consequences. A major issue is that control measures should continue for a long period of time and be complemented with a monitoring system that may be hard to keep in place [28].Food safety programmes are a critical component of any effective brucellosis prevention programme. Measures aimed at evaluating the microbiological safety of food especially milk and milk-based products generated from small farming communities [29]

1.2.3 Associated factors towards Bovine tuberculosis and Brucellosis

Most of the farmers in Mana and Limmukosa districts of Jimma zone were performing incorrect practices that favor the transmission of the diseases. Co-residing in the same house with animals, mixing different species of animals, consumption of raw animal products, backyard slaughtering systems were the factors that expose to zoonoses [12].Another study that described the consumption of raw milk and meat indicated that 3.6 to 69.6% respondents not only consumed uncooked or unpasteurized animal products but also applied cream from raw milk on their skin cracks. Even sleeping in animal shed may be one of the risk factors associated with the occurrence of zoonotic diseases: brucellosis and tuberculosis. About 69.2% respondents belonged to low to medium knowledge level categories [26].

A cross-sectional study was conducted for the assessment of risk factors that could promote transmission to humans in smallholder farms in central Ethiopia (Wuchale-Jida district) using questionnaire where 85% of the households handled aborted fetuses and afterbirths with bare hands and 78% of the owners with infected herds usually drank raw milk. The study also showed that significant proportions of the households were observed to consume raw milk. All the above-mentioned factors could contribute to the occurrence of brucellosis both in animals and humans [13].Factors like educational level, information source, and profession were considered for possible association of foodborne zoonoses at different magnitude level [30].

A study conducted to determine the sero-prevalence and factors associated with *Human* Brucellosis (HB) among abattoir workers in Abuja, Nigeria showed a total prevalence of 24.1%. Occupational-exposure of >5years and eating raw meat were significantly associated with HB [18].

The study conducted to assess the level of knowledge, awareness and risks of zoonotic diseases among livestock owners in Pudicherry region assessed the source and transmission of infection to the farmers and tested their knowledge and

awareness about zoonotic diseases. Only 16.4%, 4.8% and 3.6% of respondents knew that diseases in animals can be transmitted to humans; zoonotic potential of brucellosis and BTB respectively [31]. The persistence and prevalence of brucellosis in pastoral communities are difficulty in gathering information and to their mobility. However, these communities are economically and culturally dependent on livestock [32].

1.2.4 The conceptual framework

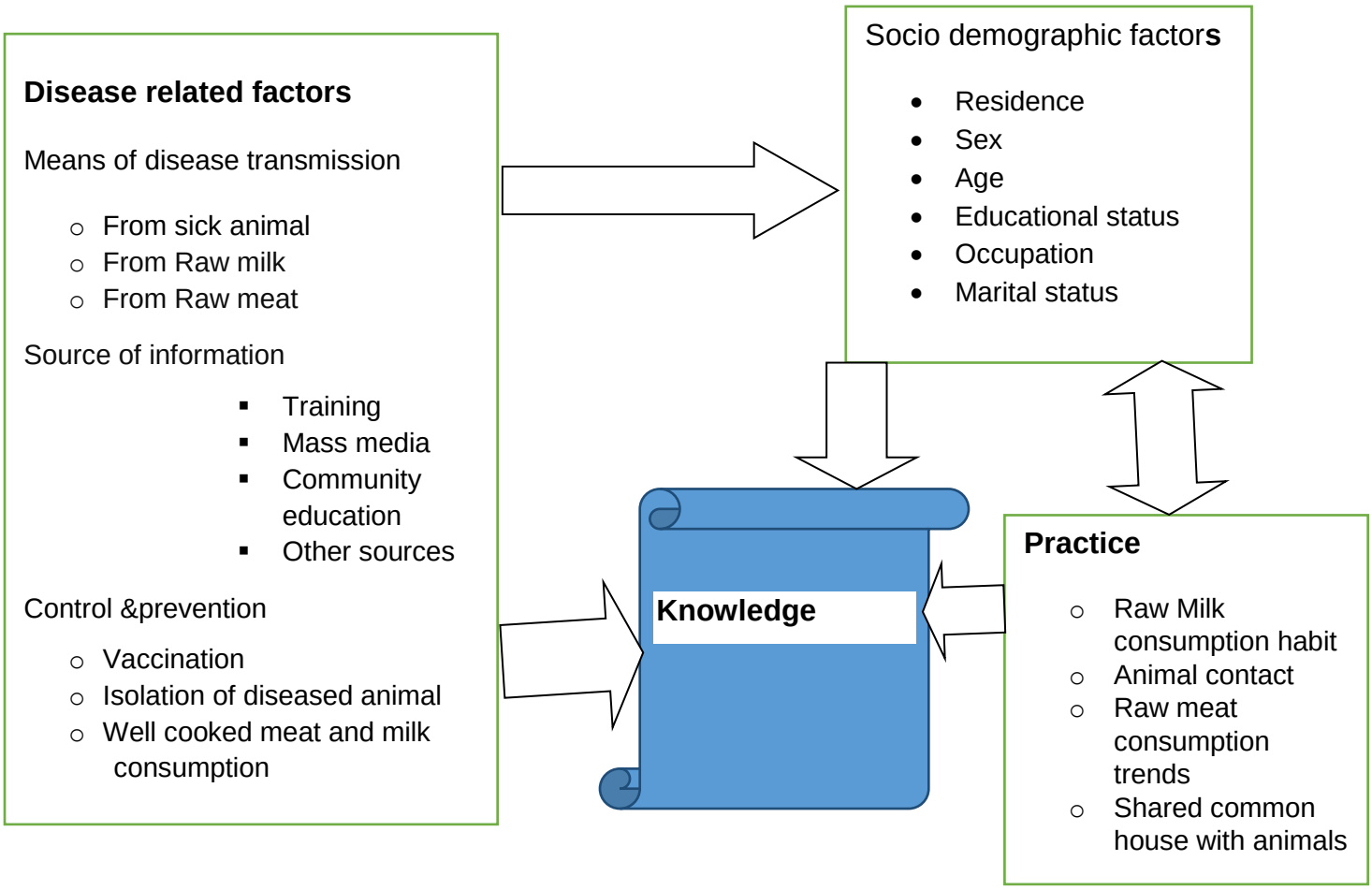

Figure 1: The conceptual frame work were adapted from different literatures [12, 13, 28,30]

1.3 Justification of the study

Brucellosis is one of the commonest zoonotic diseases worldwide with more than 500,000 new cases occurring annually. It is highly contagious zoonotic disease worldwide.

Zoonotic Tuberculosis due to *Mycobacterium bovis* is one of the most public health concern among poor countries due to the endemic immunosuppressive disease causes and amiss diagnosis with human tuberculosis, existence of huge livestock population paralleled with poor awareness, risky practice and lack of control strategy.

The farming systems in our country were mostly extensive and mixed farming type. Humans directly or indirectly contact with animals and have high raw meat and milk consumption habits from undiagnosed animals slaughtered in the backyard and milk from extensive farming systems. All of these activities expose humans to zoonoses.

Many studies conducted in many parts of Ethiopia focused only on the prevalence of the two common animal origin food borne zoonoses in certain animal origin foods. They didn't find out what the knowledge of the community towards animal origin foodborne zoonoses. No research had been conducted in the study area on this topic. Therefore, it had been very important to assess the knowledge of those households about Bovine tuberculosis, brucellosis and associated factors.

2. OBJECTIVES

2.1 General objective

Assess Knowledge and associated factors towards Bovine tuberculosis and Brucellosis among the community in Lay Gayint District, South Gondar Zone, Amhara Regional State, Ethiopia.

2.2 Specific Objectives

- To assess the knowledge status towards Bovine tuberculosis and brucellosis.
- To identify factors associated with knowledge towards Bovine tuberculosis and Brucellosis in Lay Gayint District.

3. MATERIALS AND METHODS

3.1 Study area and study period

This study was conducted in Lay Gayint District of South Gondar Zone, Amhara Regional state, Ethiopia. The study period was from March to april, 2017. The area is found 75 km 175 km and 739 km far from the zonal capital Debre tabor, Bahir dar and the capital city Addis Ababa respectively. The district has 29 rural kebeles and a total area coverage of 151,182 hectares with an altitude from 1500 to 4231 MASL and 13 ^{o}c -27 ^{o}c temperature range. The annual rain fall ranges from 600mm to 1200 mm. The total human population of the district is 201,787(male 102,109, female 99,678) and 39,882 households (31485 males and 8397females). Among these 95% of the life of the total population depend on agriculture. Both Governmental and private health and veterinary facilities exist in the district. The district contains one district Hospital, nine (9) health centres, two private medium clinics, four medium clinics and twenty nine veterinary clinics and one governmental and two private veterinary pharmacies [33].

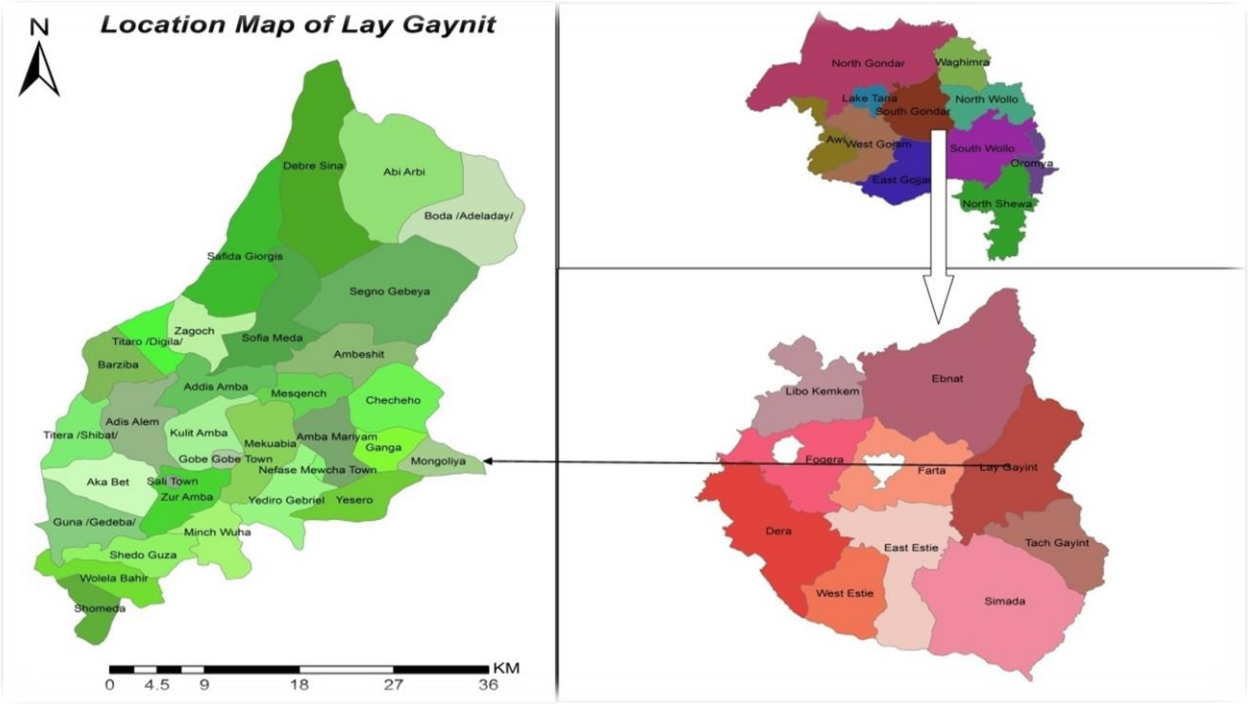

Figure 2: Map of Amhara Region and Lay Gayint District [33].

3.2 Study design

Community based cross-sectional study design was conducted to determine the status of knowledge towards Bovine tuberculosis and brucellosis.

3.3 Source population

The source population for the study were all household members (either of males or females), who are age greater than 18 years in all kebeles of Lay Gayint District.

3.4 Study population

The study population were those household members (either of male or females), who are age greater than 18 years in selected kebeles of Lay Gayint District.

3.5 Study subjects

The study subjects were those household members (either of male or females), who are age greater than 18 years in selected households of Lay Gayint District.

3.4.1 Inclusion and exclusion criteria

3.4.1.1 Inclusion criteria

Family members, who were age >18 years in randomly selected households.

3.4.1.2 Exclusion criteria

Family members who were age >18 years in randomly selected households were seriously sick or mentally ill at the time of data collection were excluded.

3.5 Sample size and sampling procedure

3.5.1 Sample size determination

Sample size was calculated using the standard formula for estimating a single population proportion [34].

$$n = \frac{(Z_{\alpha/2})^2 p(1-p)}{d^2}$$

Where:

n = the sample size to be determined

$Z_{\alpha/2}$= the standard normal deviate set at 1.96, which corresponds with the 95% confidence interval

P = population proportion that had good knowledge used for BTB = 45.6%, and Brucellosis= 22.1% [12]

d = margin of error. 95% confidence level use

Taking the required precision to be 5% and 10 % for the non-response rate and

Substituting into the above formula, we got, $n = \frac{(1.96)^2 x 0.456 x 0.544}{(0.05)^2}$

n = 381

Adding 10% of the sample size for non-response rate, we got n=381(1+0.1) =419

Multiplying the sample size by 1.5 for design effect of multistage sampling, we got n=628

So, the final sample size for this study would been=628

3.5.2 Sampling procedure

There were 29 rural kebeles in Lay Gayint district. Six kebeles were selected randomly by taking 20% of the 29 kebeles. From these randomly selected kebeles the numbers of household members in each kebele were identified using a sampling frame available in the District Agricultural Office. Then equal proportions of sample size were distributed to the number of house hold members in each kebele. The numbers of household members were selected in each kebele using a random sampling method.

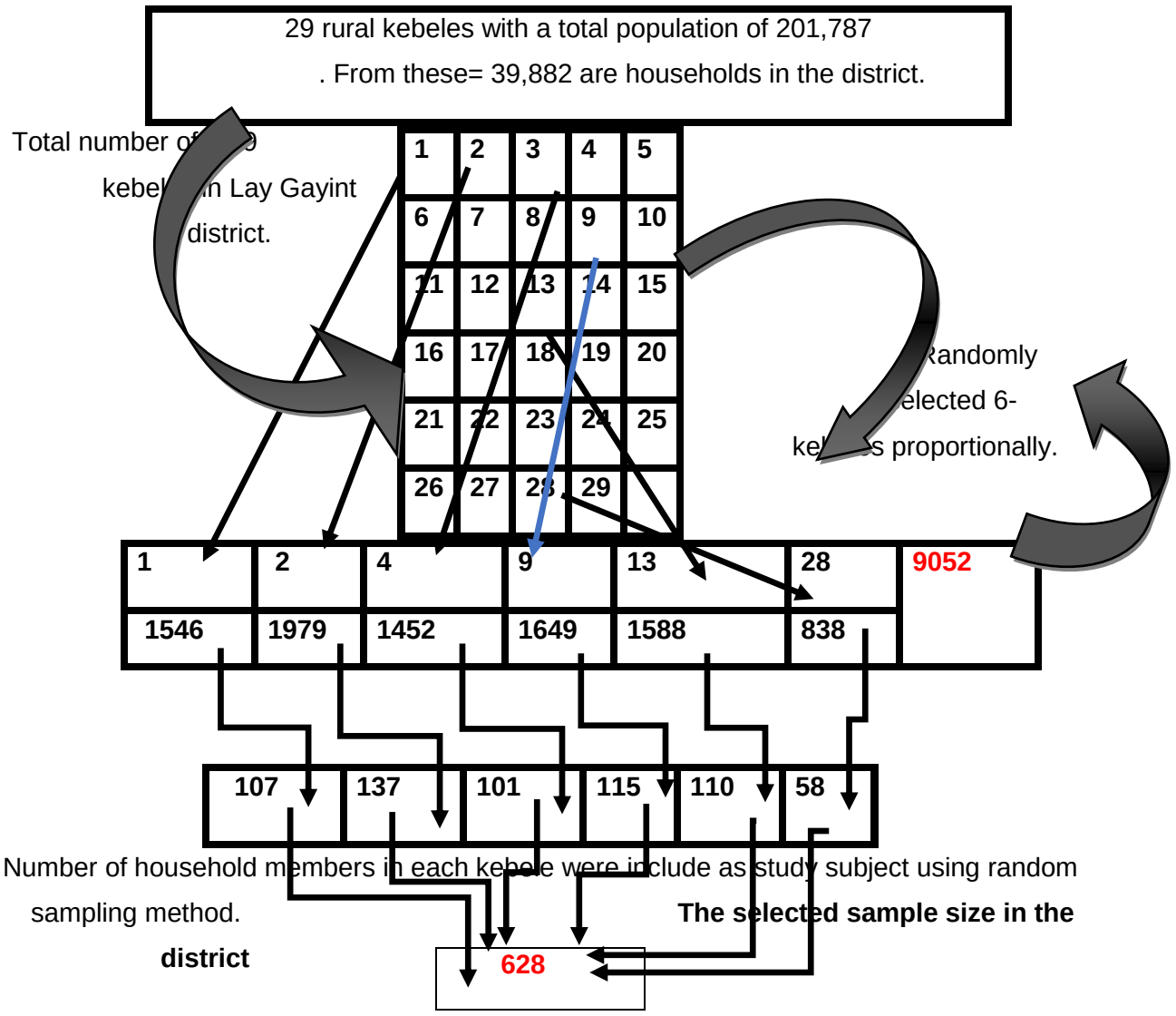

Figure 3: Sampling procedure

3.6 Study variables

3.6.1 Dependant variable

- Knowledge

3.6.2 Independent variables

- Socio-demographic factors
  - Residence ,religion
  - Age
  - Sex
  - Educational level
  - Occupation
- Disease related factors
  - Means of disease transmission
    - From sick animal
    - From Raw milk
    - From Raw meat
  - Source of information
    - Training
    - Mass media
    - Community education
    - Other sources
  - Control &prevention
    - Vaccination
    - Isolation of diseased animal
    - Well cooked meat and milk consumption
- Practice
  - Raw milk consumption habit
  - Raw meat consumption habit
  - Animal contact

3.7 Operational definitions

- **Animal origin food borne zoonoses:** Diseases that can be transmitted directly or indirectly from animal to human due to the ingestion of infected or contaminated foods of animal origin by products like meat, milk, cheese (14).
- Brucellosis is an infectious bacterial zoonotic disease caused by member of the genus Brucella. The possible sources of infections include all infected tissues, aborted fetus, vaginal discharges, cultures and potentially contaminated materials [14].
- **Good knowledge towards Bovine tuberculosis and brucellosis:** The participants were said to have good knowledge if he/ she can answer greater than 50% of knowledge measuring questions [25].
- **Poor knowledge towards Bovine tuberculosis and brucellosis:** The participants were said to have poor knowledge if he/ she can answer less than or equal to 50% of knowledge measuring questions [25].

3.8 Data collection tool and procedure

Pre-structured questionnaire with face to face interview was used to collect data. The questionnaires were primarily prepared in English and translated into Amharic by the principal investigator. Six data collectors and two supervisors with educational level of first degree who had been good knowledge of zoonotic diseases they had employed for each randomly selected kebeles. The supervisors were from Nefase Mewucha town. Data collectors and supervisors were trained focussing on the data collection tools and procedures for two days. Data collectors were assigned to each kebele by the principal investigator. The data were collected using “Yes” or “No” questions supported with interview. The Investigator and supervisors carried out regular supervision, spot-checking and reviewing the complete questionnaires to maintain data quality. Prior to the data collection pre-testing were conducted in 30 households that have similar characteristics to the study participants outside the study. The overall activity was coordinated by the principal investigator.

3.9 Data management and analysis

Data entry, cleaning, were made using Epi info version 7 statistical software. Descriptive statistics such as frequency distribution, percentages, P-values of less than 0.05 and odds ratio for statistical significance tests were employed for the SPSS analysis. Logistic regression analysis also using SPSS software were used to see the influence of the different factors on the level of knowledge on animal origin foodborne zoonoses. The knowledge of foodborne zoonoses were presented in the form of binary variable (Yes=1 and No=0) and taken as the dependent variable while socio demographic data practice source of information and other independent variables are use. If P-value is <0.05 it had been considered to represent a significant difference.

3.10 Ethical consideration

The ethical approval and clearances was obtained from University of Gondar, Institute of Public Health and Institutional Review Board (IRB) prior to data collection. The objective of the study were discussed with the concerned officials of the district and written consent were obtained. Informed consent were obtained from each study participant after the purpose and significance of the study is explained to him/her by data collectors.

Great emphasis were given for the confidentiality and privacy of respondents throughout the study period. The participants would also be informed that the information obtained from them had not disclosed to the third person. Their participation were voluntary and they were informed that they can withdraw from participation at any time they would. Data were collected after obtaining informed verbal consent from each study participant.

3.11 Dissemination and utilization of the result

The result of the study would be presented to University of Gondar Collage of Medicine and Health Sciences, Institute of Public Health as part of master of veterinary public health and it would had also shared to University of Gondar Collage of Veterinary Medicine and Animal Sciences. Livestock and Fisheries Development and Promotion Agency of Amhara Region, Lay Gayint district agricultural and health offices, kebele administrations and stake holders also share the result of the study.

4. RESULTS

4.1 Socio demographic characteristics of the community

A total of 579 respondents' were participated in the study with a response rate of 92.2%.The residence who lives in rural kebeles were 503 (86.9%) others in peri-urban 76(13.1%). From the total participants male accounts 335(57.9%) females 244(42.1%), majorities of the respondents in the study district were orthodox 564 (97.4%) and 15(2.6%) were Muslims. The age groups were classified using (18-30, 31-45 and 46-65 and above. The highest proportion of educational level of the respondent were accounted in adult education. Classifications in case of occupation farmer 384 (66.2%) merchant 134(23.2%), employer 58(10.6%) and Marital status married, 367(63.4%) single 142(24.5%) divorced 57(9.8%) and 13(2.2%) widowed were participated in the study. Of all the total respondents who had animals were 448(77.4%), while the remaining 131(22.6%) had not animals. These socio demographic characteristics of the respondents were explained in (**Table 1.)**

Table 1: Socio demographic characteristics of the respondents in Lay Gayint District 2017.

Variables	Frequency (N)	Percent (%)
Residence		
Rural	503	86.9
Prei-urban	76	13.1
Age		
18-30	146	25.2
31-45	286	48.4
46-65 and above	153	26.4
Sex		
Male	335	57.9
Female	244	42.1
Marital status		
Married	367	63.4
Single	142	24.5
Divorced	57	9.8
Widowed	13	2.2
Occupation		
Farmer	384	66.2
Merchant	134	23.2
Employer	58	10.6 %
Educational status		
Non educated	121	20.9
Adult education	277	47.8
Elementary school and above	181	31.3
Religion		
Orthodox	564	97.4
Muslim	15	2.6
Others	0	0
House hold which have animals	448	77.4
House hold which have not animals	131	22.6
Total	**579**	**100%**

4.2 Over all knowledge towards Bovine tuberculosis and Brucellosis

The overall knowledge of the respondents towards Bovine tuberculosis and brucellosis were 191(33%) good and poor 388 (67%) **(Figure 4.)**

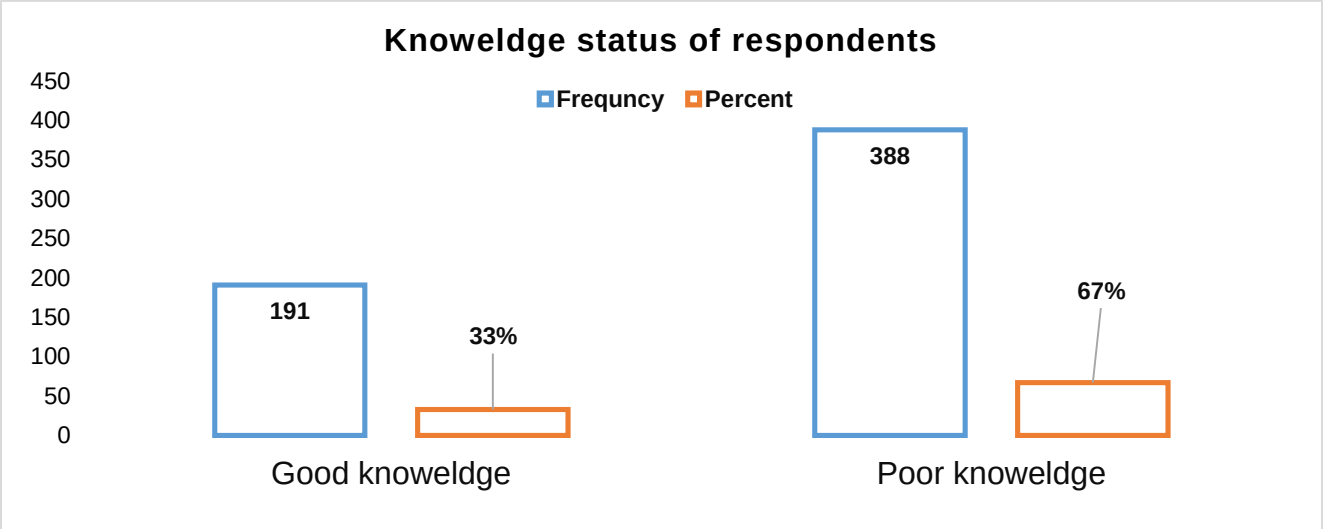

Figure 4: The overall knowledge of the respondents in Lay Gayint District 2017.

Most respondents 297 (51.3%) understood that eating raw meat is the source of disease, most respondents 380 (65.6%) did not know bovine tuberculosis and its zoonoticity at all, and 442 (76.3%) of the respondents understand the harmfulness of eating diseased animal products, only 277 (47.8%) of the respondents understood that drinking raw milk is the source of disease **(Table 2.)**

Table 1: Knowledge status of respondents towards Bovine tuberculosis & brucellosis in Lay Gayint District 2017.

Characteristics	**Frequency / Percentage**	
	Yes N (%)	**No N (%)**
Do you think raw meat is the source of disease?	297(51.3%)	282(48.7%)
Do you think Drink raw milk is the source of disease.	277(47.8%)	302(52.2%)
Do you think Harmfulness of diseased animal product?	442(76.3%)	137(23.7%)
Do you think Harmfulness of dead animal product?	422(72.9%)	157(27.1%)
Do you think live with common house with animals are a source of disease.	534(92.2%)	45(7.8%)
Do you know brucellosis (wurja)?	273(47.2%)	306(52.8%)
Do you know BTB (Amenmine)?	199(34.4%)	380(65.6%)
Total		**579(100%)**

4.3 knowledge status on zoonoticity and means of transmission

The overall knowledge of the participants about the transmission of the disease were accounts 266(45.9%) while the remaining 313(54.1%) of the participants had been poor knowledge. From the total respondents, were knew zoonoticity of brucellosis 273(47.2%) BTB 199(34.4%).Source and means of transmission of the disease awareness or Perceptions of respondents about the two common animal origin foodborne zoonotic diseased were from sick animal 340 (58.7%), raw milk 312(53.9%) raw meat 260(44.9%), While 126(21.1%) respondents don't know any means of transmission. From the knowledge measuring questions the respondents simply answered yes or no quotations based on their own perceptions without any influence that indicated in (**Table 3.)**

Table 2: Knowledge status on zoonocity and means of transmission the respondents in Lay Gayint District 2017.

Disease	Zoonoticity		Means of transmission			
			Sick animal	**Raw meat**	**Raw milk**	**Don't know**
Brucellosis	Yes	273(47.2%)	340(58.7%)	260(44.9%)	312(53.9%)	126(21.9%)
	No	306(52.8%)	239(41.3%)	319(55.1%)	267(46.1%)	
BTB	Yes	199(34.4%)	340(58.7%)	260(44.9%)	312(53.9%)	126(21.9%)
	No	380(65.6%)	239(41.3%)	319(55.1%)	267(46.1%)	

4. 4. Knowledge status on the source of information.

The majority of respondents 505 (84.1%) knew their source of information regarding Bovine tuberculosis and brucellosis with regard to their public health importance from different sources. Most respondents got their information from different sources like 181(31.3%) from mass media, 154(26.6%) from various trainings 249(43%) community education, while 92(15.9%) respondents did not know any information about these diseases and their public health importance **(Table 4.)**

Table 3: Knowledge status on the source of information the respondents in Lay Gayint District 2017.

Characteristics	Frequency	
	Yes N (%)	**No N (%)**
Training	154(26.6%)	425(73.4%)
Mass medias	195(33.7%)	384(66.3%)
Community education	249(43%)	330(57%)
Other source	171(29.5%)	408(70.5%)
No any information sources	92(15.9)	505 (84.1%)
Total	**597**	**100%**

4.5 Knowledge status on disease control and prevention strategies

The majority of respondents 467 (80.7%) found to have good knowledge that Bovine tuberculosis and brucellosis can be controlled and prevented by vaccination. Most respondents 303 (52.3%) of the study subjects did not have good knowledge on the importance of isolating diseased animals to control and prevent disease transmission, and 296 (51.1%) of them were not aware of the public health importance of consuming well cooked meat and milk to prevent and control Bovine tuberculosis and brucellosis.

Table 4: Knowledge status on disease control and prevention strategies in Lay Gayint District 2017.

Categories	**Frequency**	
	Yes N (%)	**No N (%)**
Vaccination	467(80.7%)	112(19.3%
Isolation of diseased animals	276(47.7%)	303(52.3%)
Consumption of well cooked meat and milk.	283(48.9%)	296(51.1%)
Overall knowledge on disease control and prevention strategies	123(21.3%)	456(78.7%)

4.6 Over all practices of respondents on Bovine tuberculosis and brucellosis

The overall good practices of the respondents were 128(22.1%), while the remaining 451(77.9%) of the respondents were didn't have good practice about Bovine tuberculosis and Brucellosis **(figure 4.)**

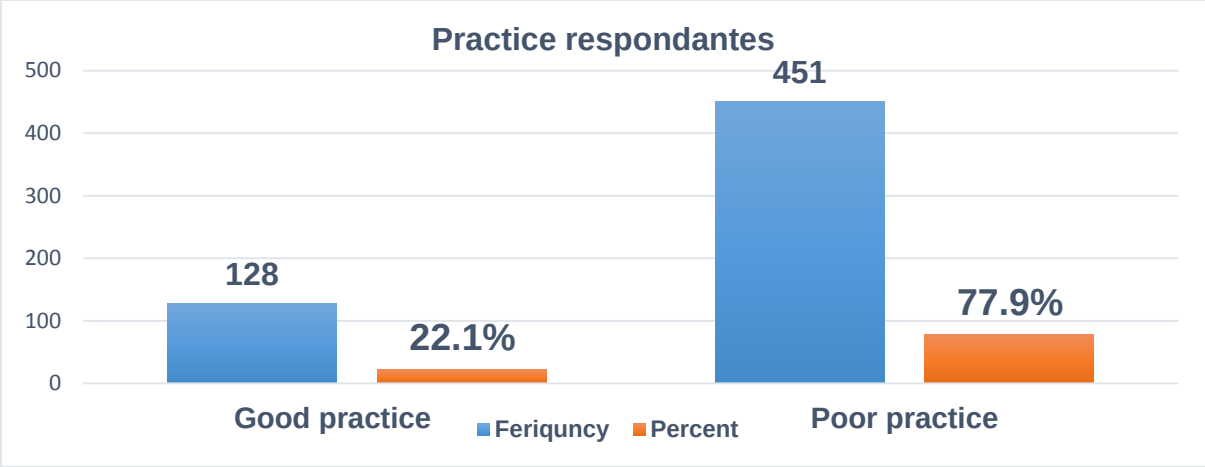

Figure 5: Over all practices of respondents on Bovine tuberculosis and brucellosis in Lay Gayint district 2017.

Most of the respondents 425 (73.4%) practiced unsafely contact their animals 533 (92.1%) of them use meat slaughtered from backyard slaughter system, 315 (54.4%) of the respondents drunk raw milk and 314 (54.2%) of them had a habit of eating raw meat. On the other hand, 192 (33.2%) of the study subjects confirmed that they shared a common house with their animals **(Table 6.)**

Table 5: Practices of respondents on Bovine tuberculosis and brucellosis in Lay Gayint District 2017

Characteristics	**Frequency**	
	Yes N (%)	**No N (%)**
Unsafe direct contact with animals	425(73.4%)	154(26.6%)
Eat raw meat	314(54.2%)	265(45.8%)
Meat source from backyard slaughter	533(92.1%)	46(7.9%)
Meat source from abattoir	11(1.9%)	568(98.1%)
Drink raw milk	315(54.4%)	264(45.6%)
Share the same house with animals	192(33.2%)	387(66.8%)
Overall practices	**128(22.1%)**	**451(77.9%)**

4.7 Bivariable and multivariable logistic regression results

Bivariable and multivariable logistic regression analysis was made to identify association between factors and knowledge on bovine tuberculosis and brucellosis. Factors like sex, residence, practice, and means of transmission and information source of the respondents were significantly associated on knowledge status on both bivariable and multivariable logistic regression. More specifically, respondents who had good practice on BTB and brucellosis had 2.42 times more likely to have good knowledge than as compared those respondents who had poor practices (AOR= 2.416, 95% CI; 1.461-3.997). Respondents who gain information source about zoonocity of Bovine tuberculosis and brucellosis had 1.69 times more likely to had good knowledge than respondents who didn't gain information at (AOR=1.695, 95% CI; 1.156-.2.484).participants who lived in urban areas were had 1.85 times more likely have good knowledge about Bovine tuberculosis and Brucellosis than respondents lived in rural at (AOR=1.853 95% CI; 1.092-3.143). Female respondents were had .58 times less likely good knowledge about Bovine tuberculosis and Brucellosis than male participants at (AOR=.580, 95% CI; .394-.853). Participants who knows about the means of disease transmission of the disease were had 2.85 times more likely to have knowledge about Bovine tuberculosis and brucellosis than who didn't know any means of transmission (AOR =2.848, 95% CI; 1.919-4.227), While other variables like education level, religion, age, occupation and marital status of the respondents were not significantly associated with knowledge of these disease **(Table 7).**

Table 6: Bivariable and multivariable logistic regression results of factors associated with knowledge status of the respondents in Lay Gayint District 2017.

Variables		Knowledge		COR(95% CI	AOR(95% CI)	P. value
		Good	poor			
Practice	Poor	103	25	1.0	1.0	
	Good	285	166	2.4(1.489-3.867)	2.416(1.461-3.997)	.001
Sex	Male	182	62	1.0	1.0	
	female	206	129	.544(.379-.782)	.580(.394-.853)	.006
Means Transmission	No	211	55	1.0	1.0	
	Yes	177	136	2.948(2.03-4.27	2.848(1.919- 4.227)	.000
Information source	No	266	99	1.0	1.0	
	Yes	122	92	2.026(1.420 2.892)	1.695 (1.156 -2.484)	.007
Residence	Rural	344	149	1.0	1.0	
	urban	44	32	1.573 .961 2.575	1.853 (1.092 -3.143)	.022

P-value <0.05 were significantly associated

5. DISCUSSION

The overall result of this study revealed that 191(33 %) of the total respondents had good knowledge, while the remaining 388 (77%) had poor knowledge to the two common foodborne zoonotic diseases.This finding is nearly similar with the study done in Punjab, India 30.8 % [26]. While another studies in Puducherry region of India revealed 16.4% in brucellosis and 4.8% in BTB [18]. The awareness of the participants in this study about the two common animal origin foodborne zoonoses were 47.2% and 34.4% in brucellosis and BTB respectively, which is in agreement with the study done in Jimma showing a result of 46.0%, 32.8% respectively [25]. On the other hand similar studies done in Jimma reported 22.1 % and 45.6% in one case, while 0% and 29.1 % in another case for brucellosis and BTB respectively [12,18]. The reason behind for the variation in the knowledge status of respondents on BTB and brucellosis could be due to variation in socio-demographic, socio-economic, geography and residence factors.

Assessment of respondents' knowledge on mode of transmission of Bovine tuberculosis to human in this study shows by the consumption and contact of sick animal product (58.7%) , raw milk (44.9%) and raw meat consumption (53.9 %) as compared to other studies in Cape town which is reported 67% and 56% of raw milk and meat respectively [20] while in Jimma 66.8% responded by consumption of both raw milk and meat [25] . The result of this study revealed lower level of knowledge on transmission via milk and meat than Cape Town and Jimma studies may be because of lower level of awareness creation programs implemented in the study area than the two compared areas.

A total of respondent's responded that brucellosis transmitted from animal to human by direct or indirect contact of sick animal products and by products were 58.7%, raw meat 44.9% and 53.9%, and raw milk. 27.1 don't know any means of transmission of the disease. The same study revealed in Jimma 0% no any ones to know zoonotic importance brucelloses other than abortion in cattle [25]. Brucellosis had zoonotic implication especially in rural communities in the study area in

consequence of their traditional life styles. most of the people in the study area were rural residents this were significantly associated knowledge on food borne zoonotic at AOR= 1.85 and 95% confidence interval of (1.092-3.143), This indicates that people live in urban areas were 1, 85 times more likely to had good knowledge about food borne zoonosis than people live in rural areas due to feeding habits and socio demographic factors.

The largest percent of the respondents in the study area had animals were 448(77.4%). from these 442(73.2 %) were directly or indirectly contact with animals without protective equipment. All the day to day activities of the rural communities linked with animals shearing of common house, management activities consumption of raw milk and meat, using backyard meat source and lack of abattoir in the study area were significantly associated with knowledge of the respondents at AOR=2.42 and 95 % confidence interval of 1.461-3.997).These implies that people who conduct good practice were 2.42 times more likely had good knowledge than participants who conduct poor practice. This study disagreed with other study in central Ethiopia (Wuchale-Jida district) 78% drank raw milk [13].

The study participants heard information about the zoonoticity of Bovine tuberculosis and Brucellosis were from different sources like health education, training 154(26.6%) mass media 195 (33.7%) other sources like friends families as advices were 171(29.5%). In all information sources of the participants were had below the average. It indicates the availability of electronics media the infrastructure in most of the rural communities were had low information source were significantly associated with the knowledge of the respondents at AOR 1.695(1.156-.2.484 p-value less than 0.05 .the finding were agreed [30]

6. LIMITATIONS OF THE STUDY

Limitations

- **Not supported with qualitative study.**
  - ✓ Due to shortage of time the quantitative study was not supplemented with qualitative study.
- **No standardized measurement tool to assess knowledge.**
  - ✓ No universal accepted measurement tools are available to assess the knowledge status of many zoonotic diseases.
- **Lack of resource.**
  - ✓ Due scarcity of literatures, more specifically community based research outputs on these areas, make difficulty to compare and evaluate the differences.

7. CONCLUSION AND RECCOMENDATIONS

- ✓ Knowledge level of the community in the study area were below 50% this indicates low knowledge level of BTB and Brucelloses.
- ✓ Even some of the participants did not hear the name of brucellosis and BTB.
- ✓ In the study area there were no organized regular training of the communities about Bovine tuberculosis and Brucellosis.
- ✓ Most of the rural communities of the study area were not aware of the risk of contracting zoonotic pathogens from animals.
- ✓ There were not organized or stabled disease prevention and controlling strategies. Those activities increase the persistent of the disease and poor knowledge of the community in the study area. Therefore, develop knowledge status of the respondents of the community regarding Bovine tuberculosis and brucellosis. Animal health and human health departments make a joint and work with in collaboration in order to improve the awareness of the community from national to community level.

Community level

- ✓ Work in collaboration to raise community awareness on zoonotic diseases.
- ✓ The community should implement its own Guidelines to improve the awareness of controlling backyard slaughtering of undiagnosed animals, use of unpasteurized milk and raw meat and common house.

District level and above

- ✓ To strengthen Public education by collaboration about zoonosis.
- ✓ Gave certificate of recognition to sell raw meat and milk of the consumers

Zonal and above

- ✓ Organize public and animal health inter-disciplinary approach in one health philosophy.
- ✓ Researches having public Health importance should be evaluated and implemented

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10. ANNEXES

Annex1: Information Sheet and Consent Form

Title Assess Knowledge and associated factors towards Bovine tuberculosis and Brucellosis among the community in Lay Gayint District, South Gondar Zone, Amhara Regional State, Ethiopia.

Name of Principal Investigator: Sisay Assefie
Name of the Organization: University of Gondar, College of Medicine and Health Sciences, Institute of Public Health
Name of the Sponsor: University of Gondar.

Information sheet prepared for the household heads that live in the selected area prior to the study to participate in this Research Project

Introduction: This information sheet and consent form were prepared with the aim of assessing the knowledge and associated factors of towards bovine tuberculosis and brucellosis in the community of Lay Gayint District, from March to May 2017.The research group includes the principal investigator, six data collectors, two supervisors and two advisors from University of Gondar.

Purpose of the study: The aim of this study were to assess Knowledge and associated factors towards Bovine tuberculosis and Brucellosis among the community in Lay Gayint District.

Procedure: The study involves household heads in the community who live in the study area. You are selected to be one of the study participants, if you are willing to participate, we are so happy. Finally you are kindly requested to give your genuine response in the questionnaires.

Benefits, Risk and /or Discomfort: By participating in this research project you may feel some discomfort in wasting your time (a maximum of 20 minutes) .However, your participation is definitely important to assess knowledge and associated factors of two common animal origin foodborne zoonotic diseases within the community

from March to May 2017.There is no risk or direct benefit in participating in this research project.

Incentives/Payments for Participating: You will not be provided any incentives or payment to take part in this project.

Confidentiality: We will keep the confidentiality by using codes instead of any personal identifiers and is meant only for the purpose of the study.

Right to Refusal or withdraw: You will not be forced to participate; you have the full right to refuse and have the right to discontinue the process at any point in this research.

Person to contact: This research project were reviewed and approved by the ethical committee of the University of Gondar. If you had any question you can contact any of the following individuals and you may ask at any time you want.

Advisors:

1. Dr. TADESSE GUADU (DVM, MPH) University of Gondar, college of medicine and health sciences, Institute of public health

Tele: +251_91 109 6660

E-mail: tadesseguadu@yahoo.com

1. Dr. SELESHE NIGATU (DVM, Associate prof.) University of Gondar, collage of veterinary medicine and animal sciences
   Tele.251-91 881 4823

E-mail seleshe2@gmail.com

3. Principal Investigator**:** Sisay Assefie
   Tele: +251-918196074
   E-mail: sisaysimegn@gmail.com

Permission: You are kindly requested to permit and forward your permission to concerned bodies in your organization so that the researcher can get cooperation to undertake this study

Signature _____ date _____

Thank you very much for your cooperation!!!

CONSENT FORM FOR PARTICIPANTS

With due understanding of the information, are you willing to participate in the study?

Yes ☐

Signature/finger print of the participant

Signature/finger print _____ date _____

(Proceed with the interview)

No ☐ (Terminate the interview)

Signature of the interviewer

Name _____ Signature _____ DD_____MM_____

Code _____

Supervisors/Researcher remark and signature

_____

Name _____ Signature _____ DD _____

Code_____

Annex 2: English version of consent form

Dear ---------- good morning /good afternoon.

Dear participant. My name is _____. I am working as a data collector with Sisay Assefie, who is doing a research as partial fulfillment for the requirement of Master of veterinary public health at University of Gondar.

The main aim of his study is to assess Knowledge and associated factors towards Bovine tuberculosis and Brucellosis among the community in the District.

The results of the study will be used as baseline information to design appropriate intervention strategies. Your name will not be written in this form and the information you give will be kept confidential. If you do not go to answer all or some of the questions, you do have the right to refuse. So you are kindly requested to provide your genuine answers to the questions. If you have any question, don't hesitate to ask the interviewer. It doesn't take more than 20 minutes.

Will you participate in responding to the questions in this questionnaire?

1. Yes, (if yes say thanks and continue with him/her)
2. No, (if no say thanks and skip him/her)

Name and Signature of the data collector _____

Date of interview_____

The value of yes and no answers are Yes=1 and No=0 the total values are by counting of number of yes answers and no answers

Annex 3: English version of

I. Socio-demographic data questionnaire

101. Address of the respondent:

Zone_____.

Woreda_____

Kebele_____

102. Residence place: 1. Rural_____

2. Peri- urban_____

103. Age of the respondent (years) _____

104. Sex of the respondent: 1. Male _____

2. Female _____

105. Marital status: 1. Married_____

2. Single _____

3. Divorced_____

4.widowwed_____

106. Occupation: 1. Farmer_____

2. Merchant_____

3.Government employ_____

4.others_____

107. Educational status 1.Non educated _____

2. Adult education _____

3.Elementary school _____

4.Above_____

108. Religion 1. orthodox_____

2. Muslim_____

3. Protestant_____

4. Others_____.

II. Knowledge of the community about bovine tuberculosis and brucellosis

109. Do you have animals? yes_____No_____

110. Are the presence of animals useful for you? yes_____No_____

		YES	NO
111. Do you know any disease transmitted from animal to human?			
Are the following disease transmitted from animal to human? 112. 113	*Brucellosis*/wurja/		
	BTB(bovine tuberculosis)		
114	Don't know any one		

Awareness about the sources of infection		Yes	No
115.Food from infected animal product			
116. From unpasteurized milk			
117 .From raw meat			
118.Dont known			

.The source of information about zoonoses	Yes	No
119.Training		
120.Community education		
121.Mass media(TV, radio)		
122.Other sources(books, magazines)		
123.don't known		

The awareness of Control and prevention strategies of food bore zoonoses

No	Characteristics	yes	No
124	Do you vaccinate animals		
125	Dou threat diseased animals in vet. Clinics		
126	Do you isolate diseased animals from the herd		
127	Avoid the consumptions of raw and unpasteurised meat and milk respectively.		

Awareness level of knowledge about food borne zoonoses	Yes	No
127. Think Is raw meat the source of diseases?		
128. Think Is it un posturized milk the source of disease?		
129. Think do you consume raw meat and milk from diseased animal?		
130. Think Is there danger to consume milk and meat from diseased animals?		
131. Think Do live common house with animals is a source of disease?		
132. Is It harmful to eat meat of dead animals?		

III. Level of practice measuring questions about food borne zoonoses	Yes	No
133. Do you eat raw meat?		
134. Do you drink raw milk?		
135. Is the source of meat backyard slaughter/kircha/?		
136. Do you freely contact animals with bare hand?		
137. Is the source of meat backyard slaughter/kircha/?		
138. Do you have separate house for your animals?		

Annex 4: Amharic version of information sheet and consent form

የመጠይቁ መለያ ቁጥር ……

በአማራ ብሔራዊ ክልላዊ መንግሥት በደቡብ ጎንደር ዞን በላይ ጋይንት ወረዳ በጣም አስቸጋሪ ሰለሆኑት ከእንስሳተ ወደ ሰዉ ስለሚተላለፉ በሽታዎችና ሰዎች ስለነዚህ በሽታዎች ያላቸዉን እዉቀት፤ ተግባርና ሌሎች ተያያዥ ችግሮችን ለማጥናት የተዘጋጀ መጥየቅ፡፡

መረጃ መስጫ ቅጽ

ውድ ተሳታፊ፤እንደምን አደሩ/ዋሉ፤ከእኔጋር ለመወያዬት ፈቃደኛ በመሆንዎ አመሰግናለሁ፡፡

፡፡እኔ……ስሆን በሰዉና በእንስሳት ላይ ከፍተኛ ጉዳት በማድረስ ላይ ስላሉት ከእንስሳተ ወደ ሰዉ ስለሚተላለፉ በሽታዎችና ሰዎች ስለነዚህ በሽታዎች ያላቸዉን እዉቀት፤ ተግባርና ሌሎች ተያያዥ አጋላጭ ምክንያቶችን ለማጥናት የመጣው የጥናት ቡድን አባል ነኝ፡፡ ጥናቱ የሁለተኛ ዲግሪ ትምህርት አካል ሆኖ በጎንደር ዩኒቨርስቲ ተማሪ የሚከናወን ነው፡፡ የዛሬው ጉብኝቴ ከላይ በተጠቀስኩት ማለትም ከእንስሳተ ወደ ሰዉ ስለሚተላለፉ በሽታዎችና ሰዎች ስለነዚህ በሽታዎች ያላቸዉን እዉቀት፤ ተግባርና ሌሎች ተያያዥ አጋላጭ ምክንያቶችን ለማጥናት ሲሆን መረጃ ለመውሰድ ነው፡፡ መረጃዉን የምወስደዉ እኔ ስሆን በዚህ ጥናት ለመሳተፍ ፈቃቃኛ ከሆኑ ከ15-25 ደቂቃዎች የሚወስድ ቃለ መጠይቅ አደርግልዎታለሁ፡፡ የሚሰጡት መረጃ ሁሉ በሚስጥር የሚያዝ ነው፡፡

ሥምዎ ከቅጹ ላይ አይጻፍም፣ ከእርስዎ መረጃ ጋርም በፍጹም ተያይዞ ጥቅም ላይ አይውልም፡፡ በመጠይቁ ጊዜ ለመመለስ የማይፈልጉት ጥያቄ ካለ ያለመመለስ መብትዎ የተጠበቀ ሲሆን ጥናቱንም በፈለጉት ጊዜ ማቋረጥ ይችላሉ፡፡ ሆኖም የሚሰጡን ታማኝ መልስ ለጥናቱ ብዙ ይረዳኛል፡፡ በጥናቱ ላይ የሚኖርዎት ተሳተፎ ሙሉ በሙሉ በእርስዎ ፍላጎትና ምርጫ ላይ የተመሠረተ በመሆኑ ለሚሳተፉበት የገንዘብ ክፍያ የለም፡፡ በጥናቱ መሣተፍ ወይም አለመሣተፍ ቢመርጡ መንግሥታዊ ወይም መንግሥታዊ ካልሆኑ ድርጅቶች ከሚያገኙት ማንኛውም የጤና እንክብካቤ ጋር ግንኙነት የለውም፡፡

ጥናቱ በሚከናወንበት ጊዜ ምንም ዓይነት ሀሳብ ቢኖርዎት ጥናቱን አስቁመው ሊጠይቁኝ ይችላሉ፡፡ በዛሬው ጉብኝቴ ግልጽ ያልሆነለዎት ነገር ካለ ግለጹልኝና ላብራራ፡፡ ከዚህም በተጨማሪ ባስፈለገዎት ጊዜ የዚህን ጥናት ዋና ተመራማሪ በስልክ ቁጥር 09 18 19 6074 ወይም ደግሞ አማካሪዎቹን በ 091 109 6660 ወይም በ 0918814823 ደውለው በመጠየቅ ተጨማሪ መረጃ ማግኘት ይችላሉ፡፡

መረጃ ስብሳቢ፡ ማንኛውንም ጥያቄ እንዲያነሱ ያበረታቷቸው፡፡

Annex 5፡ Amharic version of consent form

1. ይህ ምርምር በሁለተኛ ዲግሪ ተማሪ ሲሳይ አሰፈ ተመራማሪነት በጎንደር ዩኒቨርስቲ ሕክምናና ጤና ሣይንስ ኮሌጅ የህብረተሰብ ጤና አጠባበቅ ተቋም እንደሚከናወን አውቄአለሁ፡፡ ስለምርምሩ ዓላማዎች በሚገባኝ ቋንቋ ተነግሮኛል፡፡ መጠይቁም ከ15-25 ደቂቃዎች ሊወስድ እንደሚችል አውቄአለሁ፡፡

2. የምሰጠው መረጃ በሙሉ በሚስጥር እንደሚያዝ ተነግሮኛል፡፡ አጠቃላይ የምሰጠዉ ቃለ ምልልስ ወሳኝ መረጃዎች አጠቃላይ ለምርምር ስራዉ በጣም አስፈላጊ መሆናቸዉና መረጃ በሚሰጡት ሰዎች ላይ ምንም ይነት ጉዳት እንደማያመጣና አስፈላጊዉ መረጃም የሚሰበሰበዉ በሰለጠነ የሰዉ ሀይል ስለሆነ ለመርምር ስራዉ አስፈላጊ የሆኑ መረጃወችን ሁሉ ለመስጠት ፈቃደኛ ነኝ፡፡

2.1. በጥቅሉ ለምርመሩ የሚሆኑ አስፈላጊ መረጃዎችን ከሰጠዉ በሁዓላ ማንኛዉንም አላስፈላጊ ጥቅም ላልጠይቅ ተስማምቻለሁ፡፡

2.2. በፈለኩ ጊዜ ጥናቱን ለማቋረጥ መብት እንዳለኝና መረጃም ላለመስጠት እንደምችል አውቄአለሁ፡፡ በጥናቱ ባለመሣተፌ ከመንግሥት የጤና ተቋምም ይሁን መንግሥታዊ ካልሆነ የጤና ተቋም የማገኘው ጥቅም ችግር እንደማይገጥመው ተገልጾልኛል፡፡ ከዚህ በላይ ያለውን ቅጽ አንብቤ ወይም በሚገባኝ ቋንቋ ተነቦልኝ የተረዳሁ ስለሆነ በምርመሩ ለመሣተፍ ፈቃደኛ መሆኔን በፊርማዬ አረጋግጣለሁ፡፡

የተሣታፊ ሥም…… ፊርማ/ የጣት አሻራ……..…..ቀን…….

የመረጃ ሰብሳቢ ሥም……ፊርማ…….……..ቀን……..…

የነበሩ እማኞች፣	**ሥም**	**ፊርማ**	**ቀን**
1.	**……..**	**……..**	**……**
2.	**……..**	**……..…..**	**……**

የተቆጣጣሪው/ ተመራማሪው

ሥም …… ፊርማ……..…. ቀን…….……

Annex 6: Amharic version of socio demographic factor questionnaire

101.መረጃ እንዲሰጥ የተፈለገዉ ሰዉ.

ዞን ----------

ወረዳ.....

ቀበሌ.....

የቤት .ቁ.....

102.መኖሪያ ቦታ 1. ገጠር----------

2.የገጠር ከተማ----------

103.መረጃ እንዲሰጥ የተፈለገዉ ሰዉ 1 እድሜ.1 _____

4. ያታ፤

1. ወንድ----------

2..ሴት----------

105.የጋብቻ ሁኔታ 1. ያገባ ----------

2.ያላገባ----------

3.አግብቶ የፈታ----------

4.ሚስቱ ወይም ባሏ የሞተባት/ችበት----------

106.ስራ 1.ግብርና----------

2. ነጋዴ----------

3.የመንግስት ሰራተኛ_____

4.ሌሎች_____

107.የትምህርት ደረጃ 1.የት/ት ደረጃ የሌላቸዉ----------

2. የጎለማሶች ት/ት የተማሩ------

3. ከ1-8ኛ ክፍል----------

4.ከ9ኛ ክፍል በላይ ----------

108.ሀይማኖት 1. ኦርቶዶክስ----------

2.እስልምና----------

3. ሌሎች ----------

4.ፕሮቴስታንት----------

I. ማህበረሰቡ ከእንስሳት ወደ ሰዉ ስለሚተላለፉ በሽታዎች ያላቸዉን እዉቀትና ግንዛቤ መመዘኛ ጥያቄዎች

109. እንስሳቶች አሉህ ..... 1.አዎ.....2. የለኝም

110.የእንስሳቶች መኖር ሁሌም ይጠቅማል ..... 1.አዎ..... 2.አይጠቅምም

		አዎ	አየደለም
111.	ከእንስሳት ወደ ሰዉ የሚተላለፉ በሽታዎች መኖራቸዉን ታዉቃለህ/ሽ		
.	የሚከተሉት በሽታዎች ከእንስሳት ወደ ሰዉ ይተላለፋሉ		
112	የዉርጃ በሽታ		
113	የከበት ቲቢ		
114	አላዉቅም		

iii. ከእንስሳት ወደ ሰዉ የሚተላለፉ በሽታወች ለመከላከልና ለመቆጣጠር ያላቸዉ ግንዛቤና እንቅስቃሴ

II. ከእንስሳት ወደ ሰዉ የሚተላለፉ በሽታወች ምንጫቸዉ ከምንድን ነዉ	አዎ	አይደለም
115. ከታመሙ እንስሳቶች ከሚገኙ ምግቦች		
116. ያልተፈላ/ጥሬ/ወተት በመጠጣት		
117. ያልበሰለ ስጋ በመመገብ		
118. በምን እነደሚተላለፉ አላዉቅም		

II ከእንስሳት ወደ ሰዉ ስለሚተላለፉ በሽታዎች መረጃ/ እዉቀት /የሚያገኙት ከምንድን ነዉ		አዎ	አይደለም
119.	ከስልጠና		
120.	ከማህበረሰብ አቀፍ ትምህርት		
121.	ከተለያዩ መገናኛ ብዙሃን/ቴሌቭዥን፡ራዲዮ/		
122.	ከተለያዩ ምንጮች/ከ,ጋዜጣ፣ከሌላ ሰዉ/		
123	አግኝቸ አላዉቅም		

	አዎ	አይደለም
124. እንስሳቶቻችሁነ ሁሌም ታስከትባላቸሁ		
125.የታመሙ እንስሳቶች ክሊኒክ በመዉሰድ ታስከትባላችሁ		
126.እንስሳቶች ሲታመሙ ከጤነኛወቹ ትለያላችሁ		
127.ሁሌም ወተትና ስጋ መደንብ አፍልታቸሁና አብስላቸሀሁ ጠቀማላቹህ		

		አዎ	ኤይደለም
III ከእንስሳት ወደ ሰዉ ስለሚተላለፉ በሽታዎች እዉቀት መመዘኛ ጥያቄወች፡፡			
128.	በደንብ ያልበሰለ ስጋ መመገብ በሽታ ያስከትላል?		
129.	በደንብ ያልተፈላ ወተት መጠጣት በሽታ ያስክትላል		
130.	ከታምሙ እንስሳቶች ላይ ስጋና ወተት ትጠቀማላችሁ?		
131	ከታምሙ እንስሳቶች ላይ ስጋና ወተት መጠቀም ጉዳት አለወ		
132.	የሰዉና የእንስሳት ቤት ባንድ ላይ መሆን በሽታ ያስክትላል?		
133.	የሞተ እንስሳት ስጋ መመገብ ጉዳት አለዉ?		

IV የሰወችን ተግባራዊ እንቅስቃሴ እና ከእንስሳት ጋር ያላቸዉን ተግባራዊ ሁኔታ መመዘኛ ጥያቄወች

		አዎ	አይደለም
134	ጥሬ ስጋ ትጠቀማላችሁ?		
135	ጥሬ ወተት ትጠቀማላችሁ?		
136	ስጋ በቅርጫ ነዉ የምትከፋፈሉት?		
137.	ስጋ ከስጋ ቤቶች ነዉ የምታገኙት?		
138.	እንስሳቶችን ስታዋልዱ በባዶ እጃችሁ ነዉ?		
139	የሰዉና የእንስሳት ቤታችሁ የተለያ ነዉ?		

ANNEX –7: DECLARATION

Under signed, declare that this is my original work and has never been presented in this or any other University and that all the resource material used for the thesis have been appropriately recognized or acknowledged.

Name: Sisay Assefie Signature_____ place _____

Date of submission: June, 2017

Place of submission: Department of Institute of public health (IPH) college of medicine and health sciences, University of Gondar.

This thesis has been submitted for examination with my approval as a University Advisors.

Name	Signature	Date
1. Dr.Tadesse Guadu (DVM, MPH)	_____	_____
2. Dr.Seleshe Nigatu (DVM, MVPH)	_____	_____